

REMARKS

Claims 1-10 are pending.

Claims 5-10 have been amended to change "lense" to "lens".

The Applicants respectfully assert that the amendments to Claim 5-10 and incorporated by reference in any claims depending therefrom, are not narrowing amendments made for a reason related to the statutory requirements for a patent that will give rise to prosecution history estoppel. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 122 S. Ct. 1831, 1839-40, 62 U.S.P.Q.2d 1705, 1711-12 (2002); 234 F.3d 555, 566, 56 U.S.P.Q.2d 1865, 1870 (Fed. Cir. 2001).

EXAMINER INTERVIEW

The Applicant called the Examiner on August 11, 2005 to discuss the response to the office action. The Applicant pointed out that the primary reference *Chiabrera* teaches a system with two or more optical elements per pixel wherein the optical elements have two positions; they are directed to the display or off-screen. Thus the optical elements have binary control and are either ON or OFF. The present invention uses optical elements that are directed to either the right eye or the left eye. *Divelbiss* teaches the left eye and right eye images but again uses two optical elements per pixel which are binary as in *Chiabrera*. Neither reference teaches or suggests that single optical elements per pixel are used to direct left image pixels to the left eye and right image pixels to the right eye. The Examiner stated that he understood my argument. The Applicant discussed the fact that the optical elements of the present invention are not limited to a binary operation. In the dependent claims, the optical elements are biased to correct for display variations or for optimization of a stereoscopic image. The Examiner stated that he would look at Applicant's arguments in light of the prior art and if he agrees with Applicant's assessment the arguments may be persuasive. The Applicant thanked the Examiner for discussing the Applicant's response.

### I. REJECTION UNDER 35 U.S.C. § 103(a)

The Examiner rejected Claims 1-4, 6, and 8 under *35 U.S.C. § 103(a)* as being unpatentable over U.S. Patent No. 6,329,963 B1 to *Chiabrera et al.* (hereafter "Chiabrera") in view of published U.S. Patent Application 2003/0112507 A1 to *Divelbiss et al.* (hereafter "Divelbiss").

The Examiner rejected Claims 5, 7, 9, and 10 under *35 U.S.C. § 103(a)* as being unpatentable over *Chiabrera* in view of *Divelbiss* and further in view of U.S. Patent 5, 490,015 to *Umeyama et al.* hereafter ("Umeyama").

To establish a *prima facie* case of obviousness, the Examiner must meet three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be some reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations.

**Claims 1-4, 6, and 8.** Claim 1 of the present invention is directed to a method for producing a stereoscopic image from a display having N addressable pixels comprising the five steps. The Examiner states that *Chiabrera* teaches a method of providing stereoscopic image for display but fails to recite or disclose specifically viewer's right eye and viewer's left eye. Every step of Claim 1 of the present invention recites either the viewer's right eye or the viewer's left eye. This limitation is key to the invention of Claim 1. *Chiabrera* by his own admission is an invention directed to a three-dimensional display system apparatus and method. *Chiabrera* teaches a system by which he tries to replicate the spatial radiance from each pixel of an image by dividing the pixel into M sub-pixels each having a moveable mirror element. Since M=1 would be the same as the prior art, *Chiabrera* must teach M>1 and in his example M is equal to 4. The M sub-pixels of *Chiabrera* are configured to emulate a point source radiating light in every direction. *Chiabrera* directs light at specific angles (depending on M) or OFF screen in the case no light is deemed to radiate from a particular pixel. While

*Chiabrera* claims to be able to produce an auto stereoscopic image with his system and method, *Chiabrera* does not teach or suggest the method of Claim 1 of the present invention.

The Examiner states that while *Chiabrera* fails to teach or suggest the limitations of Claim 1 of the present invention. However, the Examiner then states that *Divelbiss* teaches all of the limitations of Claim 1. *Divelbiss* teaches a system wherein the display is configured into a plurality of column and rows. Further, the system of *Divelbiss* configures the columns into column pairs with a first column dedicated to a first eye view and a second column dedicated to a second eye view. Thus, since the intersection of rows and columns form the N pixels of Claim 1 of the present invention, then  $N/2$  of the pixels are dedicated to the first eye and  $N/2$  are dedicated to the second eye in an interleaved fashion. See *Divelbiss* FIGS. 17-23 and 45 where the interleaved pattern is shown in detail. Thus, *Divelbiss* does not teach or suggest producing a stereoscopic image from a display having N addressable pixels comprising the step of generating N pixels of a first frame. Rather, *Divelbiss* teaches a display having N addressable pixels and generating  $N/2$  pixels for each of a first and second frame. In Claim 1 of the present invention the entire display is dedicated to either the left eye or the right eye. *Divelbiss* uses only half of his N pixels (in an interleaved fashion). For *Divelbiss* to generate a stereoscopic image equivalent to Claim 1 of the present invention he has to have a display with  $2N$  pixels. Furthermore, *Divelbiss* does not teach or suggest the two directing steps of Claim 1 since he only directs light from  $N/2$  pixels to the right eye for the first time period and light from another  $N/2$  pixels to the left eye for the second time period. While this difference between *Divelbiss* and Claim 1 may appear small, it directly affects how the N optical elements are configured. The micro mirrors of *Divelbiss* are either in a position where light is directed to an eye or they are OFF. Thus the optical elements of *Divelbiss* are binary; either ON or OFF. The optical elements of Claim 1 are either directing light to the right eye during the first time period or to the left eye during the second time period, thus the optical elements do not have an OFF period but a directed to a left eye direction or to a right eye direction. Clearly *Divelbiss* does not

teach each and every limitation of Claim 1. The Applicant asserts that neither *Divelbiss* nor *Chiabrera*, singly or in combination teach or suggest all the limitations of Claim 1.

Therefore, the Applicant respectfully asserts that the rejection of Claim 1 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments.

Claim 2 is dependent from Claim 1 and contains all the limitations of Claim 1. Claim 2 adds the limitation that the first and second time periods are equal to one half the period of a frame rate. The Applicant has shown that *Divelbiss* does not teach or suggest all the limitations of Claim 1. The Examiner admits that *Chiabrera* does not teach all the limitations of Claim 1. The Applicant has shown that *Divelbiss* does not provide N pixel image data for the right eye for a first time period and a N pixel image data for the left eye for a second time period. The recitation cited by the Examiner in rejecting Claim 2 does not teach or suggest that the first and second time periods of Claim 1 correspond to one half a frame rate such that the first and second frames appear as a stereoscopic image to the viewer.

Therefore, the Applicant respectfully asserts that the rejection of Claim 2 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments and for the same reasons as Claim 1.

Claim 3 is dependent from Claim 1 and contains all the limitations of Claim 1. Claim 3 adds the step of selectively biasing the first and second sets of states of Claim 1 to optimize the stereoscopic image perceived by the viewer. The Examiner states that *Divelbiss* teaches the limitation of Claim 3. The Examiner is silent regarding any teaching of *Chiabrera* relative to Claim 3. The Applicant showed relative to Claim 1 that *Divelbiss* only teaches an optical element with a binary ON or OFF state. Therefore the optical elements of *Divelbiss* are not operable to be biased to optimize the stereoscopic image perceived by the viewer as recited in Claim 3.

Therefore, the Applicant respectfully asserts that the rejection of Claim 3 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments and for the same reasons as Claim 1.

Claim 4 is dependent from Claim 1 and contains all the limitations of Claim 1. Claim 4 adds the step of selectively adjusting biases of the first and second sets of states of Claim 1 to compensate for variations in the display of Claim 1. The Examiner states that *Divelbiss* teaches the limitation of Claim 4. The Examiner is silent regarding any teaching of *Chiabrera* relative to Claim 4. The Applicant showed relative to Claim 1 that *Divelbiss* only teaches an optical element with a binary ON or OFF state. Therefore the optical elements of *Divelbiss* are not operable to be biased to compensate for variations in the display as recited in Claim 4. Further, the Examiner failed to specifically point out where *Divelbiss* discuss compensation for variations in his display in any form.

Therefore, the Applicant respectfully asserts that the rejection of Claim 4 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments and for the same reasons as Claim 1.

Claim 6 is dependent from Claim 1 and contains all the limitations of Claim 1. Claim 6 adds the limitation that the optical element of Claim 1 is a prism/lens element oriented over each pixel. The Examiner states that *Chiabrera* teaches the limitation of Claim 6 and cites multiple references of *Chiabrera*. The optical elements of Claim 1 are either directing light to the right eye during the first time period or to the left eye during the second time period, thus the optical elements may be continuously varied from a left eye direction to a right eye direction and have no OFF position. *Chiabrera* teaches multiple optical elements for each pixel and each of these have sub-pixels with prism/lens elements. However, the optical elements of *Chiabrera* only have ON and OFF states. Likewise the Examiner states that *Divelbiss* teaches electrostatic elements that bends a beam coupled to the prism/lens element. However, the Examiner has stated that *Divelbiss* does not teach or suggest all the limitations of Claim 1. The Applicant has shown that the optical elements of *Divelbiss* are binary and are driven either ON or OFF. The optical elements of Claim 1 are either directing light to the right eye during the first time period or to the left eye during the second time period, thus the optical elements have no OFF state but rather are varied from a left eye direction to a right eye direction. Applying the prism/lens sub-pixel elements of *Chiabrera* to the micro mirror binary elements of *Divelbiss* does not lead to the invention of Claim 6.

Therefore, the Applicant respectfully asserts that the rejection of Claim 6 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments and for the same reasons as Claim 1.

Claim 8 is dependent from Claim 6 and contains all the limitations of Claim 6. Claim 8 adds the limitation that the electrostatic element of Claim 6 bends a beam. The electrostatic element of Claim 6 is coupled to the prism/lens of Claim 6. The micro mirror of *Chiabrera* and *Divelbiss* rely on twisting a beam and not bending a beam. Also the Applicant has shown that the optical element of Claim 6 is not the same as the optical elements taught by *Chiabrera* and *Divelbiss*.

Therefore, the Applicant respectfully asserts that the rejection of Claim 8 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* is traversed by the above arguments and for the same reasons as Claims 1 and 6.

**Claims 5, 7, 9, and 10:** Claim 5 is dependent from Claim 1 and contains all the limitations of Claim 1. Claim 5 adds the limitation that the optical elements of Claim 1 comprise a prism/lens element oriented over each of the N pixels and coupled to a piezoelectric element for modifying an orientation of the prism/lens element in response to one of the N control signals. The Examiner states that *Chiabrera* teaches the invention of Claim 5 and cites multiple items of *Chiabrera*. A search of *Chiabrera* finds that *Chiabrera* does not mention the word piezoelectric. The Applicant has shown that *Chiabrera* does not teach or suggest the invention of Claim 1 and therefore does not teach or suggest Claim 5 which further limits Claim 1. The Examiner is silent regarding teachings of *Divelbiss* and *Umayama* relative to Claim 5. Therefore the Applicant asserts that the teachings of *Chiabrera*, *Divelbiss*, and *Umayama* singly or in combination do not teach or suggest the invention of Claim 5.

Therefore, the Applicant respectfully asserts that the rejection of Claim 5 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* and further in view of *Umayama* is traversed by the above arguments and for the same reasons as Claim 1.

Claim 7 is dependent from Claim 5 and contains all the limitations as Claim 5. Claim 7 adds the limitation that the piezoelectric element operates to bend a beam coupled to the prism/lens element. The Applicant showed relative to Claim 5 that a search of *Chiabrera* finds that *Chiabrera* does not mention the words piezoelectric element. Therefore the Applicant asserts that the Examiner has failed to make a *prima facie* case of obviousness relative to Claim 7 since the key piezoelectric element is not mentioned in *Chiabrera*.

Therefore, the Applicant respectfully asserts that the rejection of Claim 7 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* and further in view of *Umeyama* is traversed by the above arguments and for the same reasons as Claims 1 and 5.

Claim 9 is dependent from Claim 5 and contains all the limitations of Claim 5. The Examiner then states that *Chiabrera* modified by *Divelbiss* fails to teach the limitation of Claim 9. The Examiner states the *Umeyama* teaches a piezoelectric element that rotates the prism/lens around a torsional support beam and cites column 17, line 13 through column 18, line 14. The Applicant asserts that nowhere in this recitation does teach or suggest a piezoelectric element rotating a prism/lens element around a torsional support member. The Examiner does not state that *Umeyama* teaches or suggests the invention of Claim 1. *Umeyama* teaches an endoscope that has a right and left optical channel for viewing an object with both eyes. *Umeyama's* endoscope uses a prism and uses a piezoelectric element to apply an impulse force for contracting and extending an element. *Umeyama* teaches nothing about displays or generating a stereoscopic image on a display using multiple images. Therefore the Applicant asserts that the teachings of *Chiabrera*, *Divelbiss*, and *Umeyama* singly or in combination do not teach or suggest the invention of Claim 9.

Claim 10 is dependent from Claim 6 and contains all the limitations of Claim 6. Claim 6 depends from Claim 1 and contains all the limitations of Claim 1. The Applicant has shown that *Chiabrera* and *Divelbiss* do not teach or suggest the invention of Claim 6 and therefore do not teach or suggest Claim 10 which further limits Claim 6. The Examiner is silent on any teachings of *Umeyama* relative to Claim 10.

Therefore, the Applicant respectfully asserts that the rejection of Claim 10 under 35 U.S.C. § 103(a) over *Chiabrera* in view of *Divelbiss* and further in view of *Umeyama* is traversed by the above arguments and for the same reasons as Claims 1 and 6.

II. CONCLUSION

The rejections of Claims 1-4, 6, and 8 under 35 U.S.C. § 103(a) as being unpatentable over *Chiabrera* in view of *Divelbiss* have been traversed.

The rejections of Claims 5, 7, 9, and 10 under 35 U.S.C. § 103(a) as being unpatentable over *Chiabrera* in view of *Divelbiss* and further in view of *Umeyama* have been traversed

Claims 5-10 have been amended to correct a spelling word.

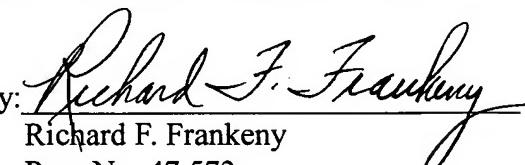
The Applicants, therefore, respectfully assert that amended Claims 1-10 are now in condition for allowance and request an early allowance of these claims.

Applicants respectfully request that the Examiner call Applicant's attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

WINSTEAD SECHREST & MINICK P.C.

Patent Agent and Attorney for Applicants

By:   
Richard F. Frankeny  
Reg. No. 47,573  
Kelly K. Kordzik  
Reg. No. 36,571

P.O. Box 50784  
Dallas, Texas 75201  
(512) 370-2872